WHAT IS CLAIMED IS:

1. A method for determining a velocity independent characteristic parameter of an analyte, wherein the characteristic parameter of the analyte is capable of being influenced by or dependent on the velocity of the analyte, said method comprising:

(a) providing a means for transporting a fluid medium comprising the analyte from a first position to a second position of a fluid flow channel of a fluidic device;

(b) measuring the characteristic parameter of the analyte within the fluid flow channel at a plurality of locations along the fluid flow channel in between the first and the second position; and

(c) determining the velocity independent characteristic parameter of the analyte using the measured characteristic parameters of step (b) and normalizing the measurement by substantially eliminating the velocity component of the measurement.

2. The method of Claim 1, wherein said method comprises velocity independent flow cytometry.

3. The method of Claim 1, wherein said fluidic device is a microfluidic device.

4. The method of Claim 3, wherein said means for transporting a fluid medium comprises a peristaltic pump or electroosmosis.

5. The method of Claim 3, wherein the substantially all analytes passes through each detection zone individually.

6. The method of Claim 5, wherein said step (b) for measuring the characteristic parameter of the analyte comprises a detector comprising a laser, a laser beam guiding device, and a means for detecting laser induced fluorescence.

7. The method of Claim 6, wherein said laser beam guiding device is an acousto-optic modulator.

8. The method of Claim 5, wherein said step (c) of determining the velocity independent characteristic parameter of the analyte comprises:

(i) comparing signals obtained from the plurality of locations along the fluid flow channel in step (b);

(ii) determining a time difference by calculating the time it takes for a particular analyte to pass from a first detection position to a second detection position; and

(iii) determining the velocity independent characteristic parameter using the time difference.

9. The method of Claim 8, wherein said step (iii) of determining velocity independent characteristic parameter comprises averaging the signal of the particle from the first and the second detection zone and normalizing the average signal using the time difference.

10. The method of Claim 9, wherein the analyte is a cell, an oligonucleotide or an organic compound.

11. The method of Claim 10, wherein the analyte is a cell and said method is used for cell sorting.

12. The method of Claim 10, wherein the analyte is an oligonucleotide and said method is used determine the number of nucleotides in the oligonucleotide.

13. The method of Claim 12, wherein said step of determining number of nucleotides in the oligonucleotide comprises:

(A) attaching a fluorescent molecule to the oligonucleotide to produce a modified oligonucleotide prior to measuring velocity independent characteristic parameter of the modified oligonucleotide, wherein said characteristic parameter is integrated fluorescent peak area of said modified oligonucleotide; and

(B) determining the number of nucleotides in the oligonucleotide by comparing the velocity independent integrated fluorescence peak area of the modified oligonucleotide with a velocity independent fluorescence peak area of a standard oligonucleotide, wherein the velocity independent fluorescence peak area of the standard oligonucleotide has been calibrated to the number of nucleotides present the standard oligonucleotide.

14. An apparatus for determining a characteristic parameter of an analyte in a fluid medium independent of the flow velocity of the analyte, said apparatus comprising:

(a) a device comprising a fluid flow channel;

(b) a means for transporting a fluid medium from a first position to a second position of the fluid flow channel;

(c) a plurality of detection zones located at different positions along said fluid flow channel and located in between the first and the second position of the fluid flow channel;

(d) a detector for detecting the analyte flowing through the detection zone; and

(e) a means for measuring a characteristic parameter of the analyte independent of the flow velocity of the analyte through the plurality of detection zones.

15. The apparatus according to Claim 14, wherein said device is a microfluidic device.

16. The apparatus according to Claim 15, wherein said means for transporting a fluid medium comprises a peristaltic pump or electroosmosis.

17. The apparatus according to Claim 16, wherein said detector comprises a laser, an acousto-optic modulator and a fluorescence measuring device.

18. The apparatus according to Claim 17, wherein said analyte is selected from the group consisting of a cell and an oligonucleotide.